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UNITED STATES BUREAU OF EDUCATION—
*Division of School and Home Gardening.*A VEGETABLE GARDENING SYLLABUS
FOR TEACHERS.

Prepared in the Division of School and Home Gardening by Miss Ethel Gowans.

To become a successful grower of vegetables and an efficient teacher of gardening, a student needs to give an entire year, or its equivalent, to the work. He should become very familiar with such problems as soil management, moisture conservation, plant food requirements, vegetable rotation, seed selection, vegetable diseases, and insect enemies with their control, as well as the canning and marketing of vegetables.

OUTLINE FOR FIELD WORK.

Experience has shown that in a course in gardening, the field work and the classroom work are of about equal importance.

A school garden—better if it were large enough to be called a school farm—should be an outdoor laboratory where the fundamental principles and practices of gardening are taught. The knowledge gained through work in the school garden should be directly applied in the raising of vegetables, either in the back yard at home or in a near-by vacant lot. Records of expenditures and receipts may be a part of the field work.

A student should become familiar with the following garden occupations:

Hotbeds and cold frames: Making, planting, managing.

Soil preparation: Spading, raking, leveling.

Planting: Marking rows, planting seeds, transplanting plants.

Care of growing crop: Hoeing, both with the hand and the wheel; spraying.

Marketing: Grading of vegetables, preparation of vegetables for the market, selling vegetables, canning.

Equipment: Each student will need a spading fork, a garden rake, a hoe, and a planting line. One wheel hoe and one sprayer will do for the entire class.

Whenever it is possible let the students visit good truck farms; observe farm operations, such as plowing, harrowing, rolling, plant-



ing by machine, cultivating, spraying, harvesting, and marketing; and secure the farmers' method of bookkeeping.

OUTLINE FOR CLASSROOM WORK.

The purpose of this course is to answer the frequently-asked question, "How can we make our gardens more productive?" To answer this question, one must become familiar with the three divisions of garden problems—requirements for plant growth, management of the soil, selection of the seed. Because it is sometimes confusing to select just the problems that confront the practical gardener, the following gardening projects are suggested. The main project is placed first. Its answer depends upon the smaller projects which follow. For instance, to prepare the soil for the best root growth, it is necessary first to know how roots grow in the soil.

So far as possible, go to the plant, or the soil, for your answer. Use a textbook only as an encyclopedia and as a guide for classroom experiments.

THREE DIVISIONS OF GARDEN PROBLEMS.

A. Requirements for plant growth.

B. Management of the soil.

C. Selection of seeds.

A. *Requirements for plant growth.*

Project I. What are the soil requirements for good root growth?

1. How do roots grow in the soil? (Nearness to surface, depth, how far do they spread out; where do we find the most roots, why; what part of the root takes in the food, how?)

2. What lessons can be learned from this knowledge?

Project II. Would you expect to get a good crop of potatoes, if you allowed the bugs to eat the leaves?

1. What is the work of the leaves?

2. Under what conditions are the leaves able to do their best work?

Project III. What is the value of knowledge of the flower to the plant grower?

1. What is the work of the flower?

2. Devices used by flowers to make sure of cross-pollination.

3. Agents that carry pollen.

4. How have men made use of this knowledge?

Project IV. What should be kept in mind in the successful planting of seeds?

1. Vitality of seeds as shown by testing.

2. Factors that govern the depth to plant seeds.

3. The soil conditions of moisture, heat, and air for the best germination.

B. *Management of the soil.*

Project I. How can a clay soil be made mellow?

1. Of what is a clay soil made?

2. How can we make the particles of a clay soil larger?

a. Deep, thorough tillage. (What tools would you use? What results would you expect to obtain by each?)

b. Add humus. (This binds the particles of clay.)

c. Add lime. (This makes the soil more granular.)



B. *Management of the soil*—Continued.

Project II. What can be done so that the soil will contain the right amount of moisture for root growth?

1. What are the sources of water for the roots?
2. How is water lost?
3. How can we prevent the loss of water from a clay soil—a sandy soil?
4. How can we check the loss of water by evaporation?
 - a. How does soil water reach the surface?
 - b. What is the time, depth, and frequency of cultivation?
5. Why do plants need water?

Project III. How can we make a soil warm for spring crops?

1. What are the sources of heat?
2. How is heat lost?

Project IV. When do soils lack heat?

1. Where in the soil is the air?
2. What may take the place of the air in the soil?
3. How may we remove the surplus water?
 - a. In what different ways are soils drained?
 - b. Which is the best method, and why?

Project V. What are the plant foods?

1. Of what is the plant made?
2. What does the plant need to make these things?
3. Where does the plant get these foods?
4. Which of these foods need to be supplied? When and how?

Project VI. What is to be gained by an application of lime?

1. How can we tell that a soil needs lime?
2. What forms of lime would you use?
3. When and how would you apply it?

Project VII. Why is humus one of the chief factors in making a soil more productive?

1. How does humus make a soil more mellow?
2. How does humus make a soil hold more moisture?
3. How does humus make a soil warmer?
4. How can humus make the plant food in the soil more available?
5. What plant food is supplied by humus?
6. How would you supply humus?
7. What is the best way, and why?

C. *Selection of seeds.*

Project I. What advantages are to be gained in selecting your own garden seeds?

Project II. What are the underlying principles in selecting garden seeds?

1. Length of time of maturity?
2. Marketing qualities?
 - a. Color and other qualities which the consumer wishes.
 - b. Shipping qualities.
3. Cooking qualities?
 - a. Size: Example—What size of a potato do you wish for table use? What size of an ear of corn is most convenient for boiling?
 - b. Ease with which it can be prepared: For instance—What shape turnip is easiest to pare?
 - c. Taste, flavor, food value. Is sugar chiefly in the white or red rings of a beet? Will the core or the cortex region of carrots contain the more food?
 - d. Length of time required to cook?



C. *Selection of seeds*—Continued.

Project III. How would you manage a garden seed plot?

1. Where would you put it?
2. How would you prepare the soil?
3. What care would you give the growing plants?
4. How would the knowledge of the flower help you?
5. When would you gather the seeds?
6. What care would you give them during the winter months?
7. Would it be necessary to test these seeds?

Equipment for class-room work on the basis of four pupils: Four dinner plates; 4 saucers; 4 eight-ounce, wide-mouth, bottles; 4 glass tumblers; 2 soil racks, each containing 4 student lamp chimneys; 4 pieces of glass, size to cover plates; 1 good thermometer.

Equipment for the entire class: Four 8-inch battery jars; $\frac{1}{2}$ bushel of pure sand; $\frac{1}{2}$ bushel of pure clay; $\frac{1}{2}$ bushel of pure humus; $\frac{1}{2}$ bushel of good loam.

Reference books: "First Book in Farming," by Charles Goodrich; "Soils and Crops," by Hunt & Burkett; "Practical Farming," by Davis; "Principles of Vegetable Gardening," by Bailey; "Injurious Insects," by W. C. O'Kane; "Forcing Book," by Bailey; "Chemistry of Plant and Animal Life," by Snyder; "Bush Fruits," by F. W. Card; "The Pruning Book," by Bailey; "Vegetable Gardening," by Watts; "Productive Vegetable Growing," by Lloyd; Farmers' Bulletins; State Experiment Station Bulletins.

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